

PPG WaveMapper

User Manual



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Introduction

PPG WaveMapper

First of all: thank you for purchasing the PPG WaveMapper app! We think it is a great iOS app for creating and playing unique sounds and music.

The new synthesis method for creating waveforms and wavetables can deliver sounds never heard before, helped by an unique user interface called *Mapping*. This manual explains how WaveMapping works and will help you to understand every parameter available to you.

Mapping

We choose the name PPG WaveMapper for two reasons. First it features the *Sound Map*, which maps the various sound programs in a unique way to access and experiment with them.

Secondly, there is a new synthesis system build in, which maps the waveforms of a sound into a new kind of wavetable which preserves the sound characteristics better than classic wavetable synthesis and at the same time allows for the manipulations which make wavetable synthesis so unique.

The Mapping window is the visualization of a pool of programs on which 8 map icons float. Those icons represent certain parameters of the synthesizer engine and each icon can be placed on one of the 32 map programs. From that moment on the parameters of that icon will take on the settings of those parameters in the underlying map program in the MAPPING module.

WaveMapping is a completely different way of programming sounds. You do not start with a lot of detailed settings, but with a

combined set of parameters which you can select with the tap and swipe of a finger on the touchscreen by placing one or more map icons on top of a root program. The combination of those parameters is a far more intuitive way of creating sounds. It gives the user of any skill level a very fast way for creating unique sounds. Each user program gets saved with its own map.

New analysis/synthesis system

PPG WaveMapper also uses a new synthesis system, which can be seen as a bridge between wavetables and samples. In wavetable systems you have great flexibility in controlling the sound, but sound material is limited to harmonic, noise-free waveforms. On the other hand there are samplers, which have very high sound quality, but very limited editing features. In PPG WaveMapper there is a new type, which we call “Time Corrected Sample” (TCS). This synthesis system can reproduce a much wider palette of sounds than classic wavetables, but still allows for a total control of the access via an envelope or LFOs (Low Frequency Oscillator).

PPG WaveMapper allows you to convert any sample you load into the app synthesized waveforms. Of course PPG WaveMapper comes with a bunch of factory synthesized waveforms (including the wavetables that are available in PPG WaveGenerator). It does not stop here: The synthesized waveforms can be converted into classic wavetables as well! By the way, you can still use samples that are less suitable for TCS conversion as a normal playable sample for each oscillator sound source.

The possible combinations of all these



MAPPING module window.

different waveforms make PPG WaveMapper capable of achieving limitless sounds.

User interface

Let's take a look at the overall view of the app and after that explain the usage and meaning of all the parameters that can be changed.

After opening PPG WaveMapper for the first time you will be in the *Mapping* module and factory preset *Hickup Flute* will be automatically selected. If you see something else, just press the most upper left button on your iPad screen named MAPPING.

Notice: No matter in which section of the app you are, the global upper menu bar with the main module buttons will always be visible.

The global menu bar shows from left to right the following buttons and selection tools:



MAPPING module button

This button will bring you to the MAPPING module, we also call it the Sound Map. A detailed description of this and the other modules follows later on.



PARAMETERS module button

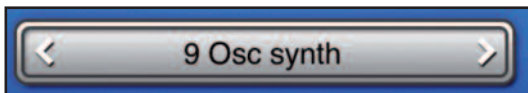
This button will bring you to one of four sub modules, which buttons are directly placed as sub tabs under the global section. The four sub modules are called OSCILLATORS, NOISE+FILTER, AMPLIFIER+DELAY and PERFORMANCE. Just touch them and take a look to get familiar with the sub modules.

**ANALYSE page button**

This button will bring up the ANALYSIS module window, where you can import samples, convert them into synthesized waveforms, convert those waveforms into waves and wavetables etc.

**SETUP module button**

This brings you to a module window with global user settings like audio quality, MIDI settings etc.

**Left and right PROGRAM SELECTION buttons**

These buttons will select the program before and after the actual selected program, which name is visible in between the program selection buttons.

Notice: you can always change the name of a program by tapping in the name field. You have to save the program to save the new name.

PROGRAM TOOLS symbol

Tapping this button will bring up a popup menu with program save, init and copy parameters as well as a randomize parameter and a help menu selection with a short description of these program editing parameters.

PROGRAM BROWSER module button

Touching this button will bring you to the browser module window with three sections where you can select, order and edit programs, edit program banks, edit program categories etc.

Touching the PPG WaveMapper logo will show the apps version number and some other related info.

The lower part of the iPad screen will always show the keyboard with to the left or right of it (depending on the setup setting for left- or righthanded use) the octave *up* and *down* buttons, and to the far right the *Recorder section* to make it possible to make live audio recordings of your performances (see picture at the bottom of this page).

The keyboard scale can be customized per program.

Notice that in various modules and sections you will find small triangles which will bring up a popup menu with special parameters and features and help files for the specific synthesizer module or module section. Each and every parameter will be explained in this manual.

Lastly, be aware that the various windows between the main upper menu bar and the keyboard section, sometimes have their own window menu bars. See for instance the picture of the MAPPING module window on page 6. Under the main menu bar, you see the menu bar for the MAPPING module with mapping related parameters.

Before you read on

Take time to read the helps files in the PPG WaveMapper app itself. You will find them under the triangle popup menus under *Help*. These help texts give a short and overall explanation of various modules, sub modules and sections and their parameters.

The keyboard and recorder section.



Let's play!

Let's take a look and listen to one of the factory sounds to get an idea of the sonic possibilities of PPG WaveMapper and how that mapping works.

First, start the PPG WaveMapper app on your iPad. Press the PROGRAM BROWSER symbol (labelled **1** in the picture below) in the main menu bar to open the browser module and select the program named *9 Osc synth* (it should be somewhere at the start of the list of the factory preset programs in the right window of the BROWSER module). Then, press the MAPPING symbol (labelled **2** in the picture below) in the main menu bar to open the MAPPING module. Notice that various icons are situated on top of various root programs, taking their

specific icon module parameter values from those various root programs (see picture below).

What happens in this sound is partly visible in the MAPPING module window. The oscillator map icons 1, 2 or 3 are situated on top of the program *3 Osc Sawtooth* (lower right corner) taking on the oscillator resources of that root program. Now drag the three oscillator icons one position up, so that they are on top of root program *Sitar*. Notice that the resource of the oscillators have changed (the sound clearly changed from a fat string sound to a Sitar like sound), but also that the behavior of the envelopes, filter, LFOs etc did *not* change. Likewise you can move around the other map icons to change the parameters belonging to



MAPPING module window with 32 root program fields and 8 map icons.

them. Drag for instance the LFO icon (L) onto the root program *Vibrato strong* (upper row, third from the left) and notice how the pitch of the sound changed (a random LFO is now modulating the pitch).

Just play around with all the map icons to get the idea of the mapping feature. We think it is a good starting point to create your own sounds, no matter if you are a beginner or experienced synthesizer user.

The names of the underlying programs already give a hint of what the sound will be or what the modulation effect will be for the map icon you put on it.

Check out the MAPPING chapter for detailed information about every parameters available in the MAPPING module.

Some quick notes here to get you started:

- Tapping and holding a map icon will make the app jump directly to the connected section of the synthesizer where you can adjust the parameters in detail.
- Double tapping on one of the 32 root program fields will bring up a popup menu with various root load functions.
- Tapping the RANDOM icon in the MAPPING module menu bar (label 3 in the picture on page 8) is a good starting point to create new sounds.

Root and preset programs

There are actually two kind of programs that can be used in PPG WaveMapper:

- root programs
- preset programs

The parameters of root and preset programs are actually the same. The difference is in how they are used. Preset programs are much like presets you are familiar with on other synthesizers. They capture all sound changing parameters and can be edited, named and saved. Root programs are used as programs on the Sound Map in the MAPPING module window and provide a set of parameters of one or more of the modules the synthesizer is build

up with (be it the oscillators, the filter, the LFOs etc.) Those sets of parameters can be directly chosen by dragging one of the 8 map icons on a root program.

The factory *root* programs are part of the app. They can not be deleted and they can not be changed. The factory *preset* programs are also part of the app in a program bank called “factories”. The factory programs can be changed and saved or deleted, and the whole original factory bank can also be restored from internal memory (see PROGRAM BROWSER module).

A preset program can be used as a root program as well. In that case you are responsible for these programs yourself. If you delete or modify them, the program which makes use of them (in the MAPPING module window on the Sound Map), may also change its sound or dynamic behaviour.

Oscillator resources

Each program has three oscillators and each one can make use of a different resource: wavetable and/or TCS files (TCS files can also be played back as normal sample).

In the BROWSER module, in the browser window, when you select “Wave source” in the third column, you can see what kind of resource a program uses: a wavetable file or a TCS file. The TCS file always ends with .c in its name in that column. It could still well be that the two other oscillators of the program are using different TCS or wavetable resources.

Notice: the resource files yet have another extension (.wts) when you look at them in the iTunes document folder in iTunes on your laptop or desktop computer. the .wts extension shows that the file is an oscillator resource (be it a wavetable or a TCS file). So the full name of a wavetable file is wavetablename.wts, where TCS files are named TCSname.c.wts. There are even two more sub extensions possible when you split a wavetable or TCS resource file. More on that in the ANALYSE page chapter.

MAPPING module



This is the place where you can start building sounds, by dragging map icons (representing sets of parameters belonging to that icon) on root programs which are specially designed to give logical results that represent their names.

The first of the 32 map programs (the upper left field) is the so-called Base program. It always holds the last saved parameter set of the current preset program.

When you drag an icon from the Base program on one of the other 31 map program positions it will take on the icon specific parameters of that map program. When you move it back onto the base field, the parameters will go back to the last saved state of your program. If a map program position is empty, it will have the same settings as the base program.

The programs that can be loaded in the 31 map slots are so-called root programs.

There are two root banks active inside PPG WaveMapper, which hold these programs. One bank is always available and is protected, so you cannot accidentally delete or modify those root programs. The second bank is the user-Root bank. You can setup this bank as you like, and also prepare many of them, however only one at a time is available. Which one of these user-root banks is used, is defined in the program manager inside the Browser page (more on that in the browser chapter).

Map icons

There are 8 map icons available as starting building blocks for your new sounds. Each icon has a different set of parameters attached (see also the *Main*, *All*, *Tolerate* and *Force* parameters for extended map icon behavior).



Icon 1. This is a map icon that has parameters attached to it that represent the synths *oscillator 1* section: oscillator resource, gain if it is zero, wave envelope amount, octave setting and the wave envelope.



Icon 2. This is a map icon that has parameters attached to it that represent the synths *oscillator 2* section: oscillator resource, gain if it is zero, wave envelope amount, octave setting and the wave envelope.



Icon 3. This is a map icon that has parameters attached to it that represent the synths *oscillator 3* section: oscillator resource, gain if it is zero, wave envelope amount, octave setting and the wave envelope.



Icon O. This map icon has parameters attached that represent a larger selection of the synthesizers oscillator parameters: fine tune, glide, keyboard-tracking, wave-switch blend, ring modulation, all modulation intensities, all 12 modulation routings, the 3 wave envelopes, the 3 pitch envelopes and the audio modes for all 3 oscillators.

Some of those parameters are also attached to the map icons 1, 2 and 3. The last moved icon (be it O, 1, 2 or 3) will override those settings from the former one.

It may be clear that moving the O icon will most of the time have a greater impact on the sound than moving the 1, 2 or 3 icons. The icons 1, 2 and 3 are mainly meant to change the “waveshape” of the oscillators, while the O icon is mainly meant to change all the pitch and wave modulations.



Icon F. This map icon has parameters attached that represent the synths filter section. The parameters are: Mod1 (source and amount), Mod2 (source and amount), filter cutoff, resonance, filter envelope F1, keyboard-tracking and drive.



Icon G. This map icon has parameters attached that represent the synths gain section. Parameters are: audio 1 (source and level), audio 2 (source and level) and the balance envelope.



Icon N. This map icon has parameters attached that represent the synths noise module. These parameters are: audio 1 (source and level) and the noise color 1, 2 and 3 levels.



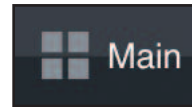
Icon L. This map icon has parameters attached that represent the synths LFO parameters: it has all parameters from the 4 LFOs attached (speed, intensity, shape and offset) plus the LFO intensity routing (if the LFO is using an envelope for its intensity control, that envelope is imported from the map program as well).

There is much more happening under the hood when moving icons across the map. The above is just a rough sketch to give you an idea what the icons do. Don't think too much about it! Just play around and let your ears decide. After that you can still change all nuances and details in the PARAMETER (sub)modules.

All eight map icons (1, 2, 3, O, F, G, N and L) send and receive MIDI CC controller messages which determine their respective x- and y-positions on the Sound Map! This is an awesome feature of PPG WaveMapper since moving one or more of these icons across the Sound Map will morph many parameter settings at the same time, which would not be possible otherwise.

For more information on the CC numbering see the SETUP module at the end of this manual.

Notice: be aware that moving the icons could cause clicks and the like because some parameter changes are not smoothly morphable. For instance, modulation routings can only be hard-switched.



Map mode 1 (first icon in the menu bar of the MAPPING window)

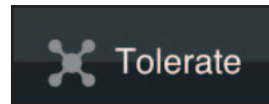
This mode will change the behavior of the oscillator icons 1, 2 and 3 (see under the map icons what parameters these icons represent).

Main: with this setting the three oscillator icons 1, 2 and 3 will always take on the main oscillator sound source, so it takes the resource from oscillator 1 from the underlying map program.

Example: when you put icon 3 on a map program it will use the oscillator resource (wavetable or TCS sample) from oscillator 1 of that map program.

All: with this setting the three oscillator icons 1, 2 and 3 will take the resources from all three oscillators of the underlying map program.

Example: when you put oscillator icon 2 on a map program it will use the oscillator resource (wavetable or TCS sample) from oscillator 2 of that map program.



Map mode 2 (second symbol in the menu bar of the MAPPING window)

Tolerate: with this setting the map icons will tolerate the map program routings.

Force: with this setting the map icons will “force” certain underlying parameters of the used map program to “do” something, even if they originally are “off”.

To get an idea, use for instance the noise map icon N and drag it around over the 32 map programs with both *Tolerate* and *Force* selected.

Roughly spoken *Force* will give more drastic and experimental results than *Tolerate*.

Notice: Keep in mind that the map is not meant for detailed construction of sounds but to give interesting starting points.

MORPHING

Morphing slider: With this slider you can set the strength with which values of parameters change when you drag a map icon from one program to the other. Low settings will give the smoothest morphing results, while high settings will give more abrupt transitions.

RANDOM**Random button**

pressing this button will spread the icons randomly over the 32 map program positions. Note that *Main*, *All*, *Tolerate* and *Force* will be active as well.

INIT**Init root types 1**

With this popup menu you can select and place various root program flavors on the map.

- Init Atmos:* will place atmospheric root programs on the Sound Map.
- Init Bass:* will place bass root programs on the Sound Map.
- Init Efx:* will place effect root programs on the Sound Map.
- Init Keys:* will place key root programs on the Sound Map.
- Init Lead:* will place lead root programs on the Sound Map.
- Init Pad:* will place pad root programs on the Sound Map.
- Init Perc:* will place percussion root programs on the Sound Map.
- Init Poly:* will place poly root programs on the Sound Map.
- Init Vocal:* will place vocal root programs on the Sound Map.
- Init Wave:* will place wave root programs on the Sound Map.

≡**Init root types 2 and map editing**

- Init Synthetics:* this will place some synthetic root programs on the Sound Map.
- Init Instruments:* this will place some instrument root programs on the Sound Map.

Init Modulat: this will place some modulation root programs on the Sound Map.

Init Splits: this will place some split root programs on the Sound Map.

Clear: clear all fields except the Base program (upper left program on the Sound Map).

Copy: copy the Sound Map with 32 programs from the selected preset program.

Paste: paste the copied Sound Map with 32 programs into the selected preset program.

Help: show info about the MAPPING module.

Map field options (double tap on one of the 32 map fields)

Load Root: will load a root program. Root programs must be seen as exciters for the preset program you are using or creating: its not so important how the root program sounds, but how useful it is on the map. The names of the root programs always hints at its goal: be it the resource of the oscillator, the modulation settings etc.

Load Synt: this command loads the synthetic root programs from the roots bank.

Load Inst: this command loads the analysed instrument root programs from the roots bank.

Load User: this gives the opportunity to load a user (or factory) preset program as root program.

Notice: since it is possible to use a preset program as root program, it would be wise to somehow mark those programs yourself (in their names) for future clarity, so that you do not accidentally alter or delete them. Because they could be used by more than one preset program as root program a change or deletion will change those preset programs as well!

Clear: this will clear the selected program field on the map. When you put an icon on an empty map program field it will use the parameter settings from the base program field (upper left map program field).

Bundle: a shortcut to make a selected map program (being it a root- or preset program) the source for all map icons.

Notice: the *Main*, *All*, *Tolerate* and *Force* parameters are active too.

Map icon shortcuts

When you press and hold a map icon, the app will jump directly to the synthesizer module section with the parameters that are important for that map icon. I.e. if you press

and hold map icon 2 you will end up in the PARAMETERS module -> oscillators sub module -> Osc 2 section from where you can directly edit its parameters in detail.



PARAMETERS module, OSCILLATORS sub module window.

PARAMETERS module

Under the PARAMETERS tab (global menu bar, see picture, label 1) you will find all sound shaping parameters of the selected user (or factory) program. Every slider can be reset to its default value by simply double tapping on it.

The PARAMETERS module is divided into four sub modules (picture, label 1a, 1b, 1c, 1d).

OSCILLATORS sub module

In the upper part of the OSCILLATORS sub module window there is a menu bar, which contains three tabs, the small three white numbers (1, 2 and 3) in the upper left of the picture above, label 3, and to the far right is the oscillator edit triangle, label 4. The three oscillator tabs will select the oscillator parameters for each respective oscillator.

Edit triangle (label 4 in the picture on page 13)

Copy: this parameter let you make a copy of the oscillator parameters (this is a “per oscillator” copy function: you copy the parameters of oscillator 1, 2 or 3.

Paste: this parameter let you paste the copied parameters into the selected oscillator.

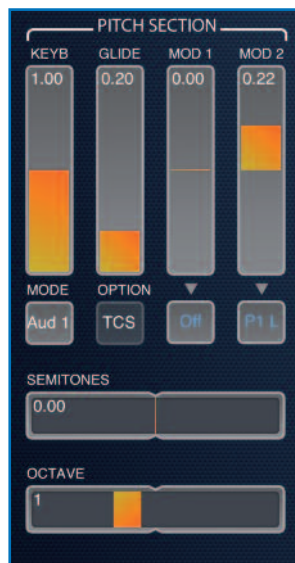
Init: this parameter let you initialize the parameters of the selected oscillator.

So the copy, paste and init parameter work on one of the three oscillators (the one that is selected).

Help: shows info about the OSCILLATORS module.

The oscillator window is divided into three sections: the *Pitch section*, the *Envelope/Wave section* and the *Wave section*.

PITCH section



KEYB slider: this slider controls the keyboard tracking for the selected oscillator. A value of zero gives no tracking. This means that each pressed key on the keyboard will produce the same oscillator pitch. This can be desirable when creating FX sounds or when using an oscillator as LFO.

A value of 1.00 will give normal keyboard tracking.

Notice: the area around 1.00 is very sensible, letting you define very fine detuning to the keyboard scaling. This way it is possible to get a closer emulation of (old) analog synthesizer behavior where for instance keyboard tracking for the pitch could drift a little because voltage controlled signals are not like digital signals: they tend to fluctuate

over time due to various reasons (temperature, tolerance of used components etc.).

MODE select: with the MODE selector under the KEYB slider you can choose one of three settings:

Aud 1: suitable for playing lower pitched sounds.

Aud 2: suitable for playing higher pitched sounds.

The difference between these two settings is that *Aud 1* includes more overtones, than *Aud 2*, so when playing high pitches, this may lead to unwanted aliasing effects. In such a case *Aud 2* may give better results. But its all up to your taste of course!

Sub: this setting makes the oscillator act on a low frequency (even below audio, hence the name Sub). With this setting you can use the oscillator as a very sophisticated LFO in modulation slots, since you can also modulate the waveshape of the oscillator itself.

GLIDE speed slider: the glide speed slider does exactly what it says: it changes the speed of the glide effect. Low settings give a fast glide effect, higher settings give a slower glide effect. Notice that the glide works when sliding horizontally over the keyboard when touching and holding a key (legato). It also works in *mono MIDI mode* when using an external controller (see SETUP module chapter for more info on MIDI settings).

OPTION select: the option select parameter let you choose between *TCS* and *Smpl*.

TCS: the oscillator resource will be played back as TCS and can be modulated like a wavetable.

Smpl: the oscillator resource will be played back like a normal sample, so with a 1:1 dependency between the playback speed of the sample and its frequency. This may be preferable when the audio is too complex for the TCS system or for creating sound effects. The option select parameter is disconnected when a wavetable is the resource for the oscillator.

MOD 1 modulation level slider: with this slider you set the amount (positive or negative) of pitch modulation by the selected modulation source MOD 1 under the slider.

MOD 1 source select: here you select the pitch modulation source.

For oscillator 1 the modulation sources for MOD 1 are:

N2: the noise from noise generator 2;
 O3: the audio from oscillator 3 (remember, when setting the oscillator MODE to *Sub*, this source can act like a sophisticated LFO which waveshape can be modulated itself as well);
 N2 E: the envelope from noise generator 2;
 N3 E: the envelope from noise generator 3;
 Off: no selection.

For oscillator 2 the modulation sources for MOD 1 are:

N2: the noise from noise generator 2;
 O3: the audio from oscillator 3 (remember, when setting the oscillator MODE to *Sub*, this source can act like a sophisticated LFO which waveshape can be modulated itself as well);
 N2 E: the envelope from noise generator 2;
 N3 E: the envelope from noise generator 3;
 Off: no selection.

For oscillator 3 the modulation sources for MOD 1 are:

N2: the noise from noise generator 2;
 O2: the audio from oscillator 2 (remember, when setting the oscillator MODE to *Sub*, this source can act like a sophisticated LFO which waveshape can be modulated itself as well);
 N2 E: the envelope from noise generator 2;
 N3 E: the envelope from noise generator 3;
 Off: no selection.

MOD 2 modulation level slider: with this slider you set the amount (positive or negative) of pitch modulation by the selected modulation source MOD 2 under the slider.

MOD 2 source select: here you select the pitch modulation source.

For oscillator 1 the modulation sources for MOD 2 are:

P1 L: the LFO from oscillator 1 pitch;

P1 E: the envelope from oscillator 1 pitch;
 CX: controller from keyboard: horizontal swipe after a key press;
 CY: controller from keyboard: vertical swipe after a key press;
 Off, no selection.

For oscillator 2 the modulation sources for MOD 2 are:

P2 L: the LFO from oscillator 2 pitch;
 P2 E: the envelope from oscillator 2 pitch;
 CX: controller from keyboard: horizontal swipe after a key press;
 CY: controller from keyboard: vertical swipe after a key press;
 Off: no selection.

For oscillator 3 the modulation sources for MOD 2 are:

P3 L: the LFO from oscillator 3 pitch;
 P3 E: the envelope from oscillator 3 pitch;
 CX: controller from keyboard: horizontal swipe after a key press;
 CY: controller from keyboard: vertical swipe after a key press;
 Off: no selection.

SEMITONES slider: with this slider you can fine tune the pitch of the selected oscillator. The slider has a total range of -7/+7 semitones.

OCTAVE select slider: With this slider you can change the octave setting of the selected oscillator. It has a range of 9 octaves.

ENVELOPE / WAVE section

In the middle of the oscillators module window we have the visualization of envelopes, waveshapes (be it wavetables or TCS files) and wave paths. See the picture on the next page.

This is an important section for editing the wavetable-, noise- and pitch-envelopes as well for editing the wavetable paths. You can also visualize the shape of the used oscillator resource here.



Envelope points with which you can change the shape of the envelope. In this case it is a looped envelope.

Let's take a closer look at the available parameters.

Envelope indication: in the upper left corner of this middle section, you will see the abbreviated name of the envelope that is shown underneath it (upper left picture, label 1). The envelope shown depends on the last touched modulation source. For instance, if you select *N2 E* as modulation source in the MOD 1 slot of the pitch section, the envelope of the noise 2 generator is shown. In the picture above you see envelope W3, being the wavetable envelope for oscillator 3.

SOLO on/off: a handy shortcut to have only the selected oscillator sounding.

Notice: the setting will always reset to “off” when changing the preset program or when changing map icons in the MAPPING module window.

Envelope edit triangle (upper left picture 2) Here we find edit parameters for the selected envelope.

Copy: copies the envelope parameters.

Paste: will paste the copied envelope parameters.

Set Loop/Kill Loop: will set a default loop for the selected envelope or will kill the loop when it is on.

Notice: gain envelopes can not have a loop.

Default Init: will set default envelope settings for the selected envelope.

Spread Points: will spread the envelope points more each time it is selected.

Help: shows information about the envelopes.

Oscillator resource selection triangle

(picture on the left, label 3)

In the ENVELOPE/WAVE window in the oscillator section we find on the lower left corner a popup menu where the name of the selected oscillator resource is printed and where you can choose different resources for each oscillator. All available factory and user wavetables and TCS files can be selected here. Each oscillator can have a different resource selected.

Newly created wavetables and/or TCS files in the ANALYSE page will also become available here. The various sections in the popup menu are:

WTS: factory wavetables;

TCS: factory TCS files;

SndD: Sound Designer wavetables and TCS files;

User: User wavetables and TCS files.

You can jump directly to one of those sections by tapping on the grey abbreviations on the right side of the popup menu.

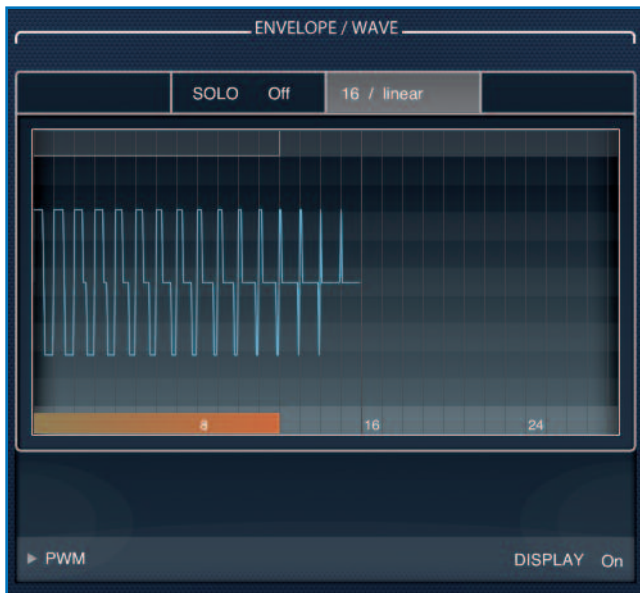
Notice: by selecting a new wavetable the eventual existing wavetable path will be reset to its default, being a linear path from the first to the last wave in the selected wavetable. More on wavetable paths later.

Display on/off

Off: In off-mode the shape of the envelope is shown in the window.

On: when set to on, the waveshape of the wavetable or TCS is drawn.

Notice: when Display is set to *on* and the oscillator has a wavetable as resource that is



Wavetable drawing with linear path from wave point 1 to 12 (the grey/yellow bar under the drawing)

played with a linear path, you will see this path under the wave drawing (yellow to orange bar, upper left picture on this page). You can edit the start and end point of this path by tapping and holding and then sliding the start or end point of the bar to the left or the right.

When you do not see that bar, the oscillator is playing a non-linear path. This is also visible in the grey rectangle above the wave drawing: it reads *complex* in that last situation (upper right picture, label 1). Otherwise it reads *linear*, or when it is a TCS resource it reads *TCS*. The number in the grey rectangle shows the number of periods or waves.

Between the grey info-rectangle and wave wave(table) drawing there is another grey bar, where you might see a green point moving horizontally when you play the keys (see picture to the right, label 1). The green point represents the position of the wave envelope of the selected oscillator within the selected part of the wavetable or TCS file. Per default the grey bar and the yellow/orange bar defining the wave path have the same position. However, the grey bar can have an offset by a changed wave offset setting or changed wave keyboard setting.



Wavetable with complex path (1).

For the following explanations please change to the preset *Vocals*. Oscillator 3 is selected, and you see that it uses the *Vowel aa bg* resource. Now set the SOLO switch to *On* and also the DISPLAY switch. The gray info field on top of the wave-display shows *64 / linear*, which means the wavetable contains 64 single waves and uses a linear path. This path is shown by the orange bar in the lower part of the display. Please swipe the wave to the left, to see that bar. The bar covers a range from wave 50 to 60. This is the range which the envelope controls.



But now the parameter KEYB (inside the *wave section*) comes into play. This allows for an additional offset for the envelope control. If you set this para to zero, and play some notes, you see, that the gray frame in the upper part of the display stays at the same position as the yellow bar. Now if you increase the KEYB value, you will find that the gray frame shifts to different positions according to the keys you play. This in fact is important to get the feeling of a constant vowel /aa/ to sound.

You may have already noticed, the green light point inside the gray frame is an indicator for the envelope position. The envelope is always limited inside the frame. But the frame itself maybe offset by the KEYB parameter and also by the WAVE OFFSET parameter.

Overall envelope usage

When an envelope is shown in the view window, you can edit the *envelope points* (picture below, label 1) by tapping and holding those points and slide them over the screen. You can also change the shape of various envelope stages (attack, decay and release) by touching and holding the lines

between the envelope points and then drag them up or down (picture below, label 2).

Notice: This feature should not be underestimated! The character of a sound depends a lot on how various levels of amplifier-, filter cutoff-, or pitch-modulation rise or decay.

For instance: a linear pitch or amplifier level modulation in the attack phase of the modulating envelope can give very different results compared to a non-linear shape. We recommend experimenting with it a lot. It can make or break your sound.

The small blue numbers in the upper right of the envelope drawing window (picture below, label 3) give some information about the velocity attenuation (you can change the value by tapping on the first number and sliding up/down the value) and information about the duration of the selected envelope, which is the right number (this value will change when you drag one of the envelope time-points to the right out of the window or to the left).

There are 13 different envelopes available in PPG WaveMapper, which are accessible in the various synth modules. Each envelope has a main target destination, but some of them also appear in modulation slots as a modulation source for other destinations.

The 13 envelopes are:

- **Envelope W1, W2 and W3:** the so-called wave envelopes, because they are primarily meant to modulate the wavetable or TCS waveshape of each oscillator. These are loopable, bi-polar envelopes with an adjustable attack and decay level.
- **Envelope P1, P2 and P3:** the so-called pitch envelopes, because they are primarily meant to modulate the pitch of each of the three oscillators. These are also loopable, bi-polar envelopes with an adjustable attack and decay level.
- **Envelope F1:** the filter envelope, primarily meant to modulate the filter cutoff. This is



Envelope points with which you can change the shape of the envelope.



A looped envelope. Notice that the loop part can be randomized in level!

also a loopable, bi-polar envelope with adjustable attack and decay level.

- **Envelope G1 and G2:** these two envelopes are meant to modulate the audio signal level of VCA 1 and VCA 2. These two envelopes are not loopable and have a fixed attack (o) and decay (full) value.

- **Envelopes N1, N2 and N3:** these three envelopes are primarily meant to modulate the level of the three available noise generators in PPG WaveMapper. These three envelopes are loopable, but have a fixed attack (o) and decay (full) level.

Notice: N2 and N3 can still be used inverted when used as modulation source for the oscillators by giving them a negative modulation amounts.

- **Envelope B1:** this envelope is primarily meant to modulate the panning of the stereo field of the audio coming out of PPG WaveMapper. It is a loopable, bi-polar envelope with adjustable attack and decay level.

Wave Envelopes: paths

A path within a wavetable is a set of two or more path-points, pointing to wave positions within the wavetable. There is always a start and end path-point which mark the

boundaries of the path within the wavetable. All wave modulation set in modulation slots will move within the waves between those boundaries, unless an offset has been set. It is a great feature to set a distinct part of a wavetable for modulation purposes. Some wavetables are for instance a collection of wavetables from older PPG synths, and not all waves in that wavetable are related then.

There are two different paths used in PPG WaveMapper (see upper left and right pictures page 17):

Linear paths: these paths have always the wave path points in successive order: for instance 3, 4, 5, 6, 7, 8, 9 or 101, 102, 103, 104. You can set a linear path in PPG PPG WaveMapper, by setting a start and end path point by clicking on the yellow/orange bar under the wavetable drawing (PARAMETERS module - OSCILLATORS sub module -> envelope/wave section (then set Display to On). All in-between waves are part of the path.

Complex paths: these paths can have wave path points in any order. They can also have wave points used more than once. Examples: 1, 3, 2, 5, 67, 66, 3, 6, 7. Or: 1, 101, 89, 120.

Notice: only the set path points are part of the path in a complex path. The in-between wave points are not a part of the path! So setting for instance wave point 3, 5, 8, 5, 9, 10 as path points, will allow the oscillator only to play those waves (not the waves 4, 6 and 7).

You can not create complex wave paths in PPG WaveMapper, however, you can copy wavetables with complex paths from PPG WaveGenerator into PPG WaveMapper (by using the iTunes document folders from both apps to copy those wavetables or by copying them by email).

In PPG WaveMapper a linear path is made visible with the yellow/orange wave path bar under the wavetable drawing in Display ON view (PARAMETERS module -> OSCILLATORS sub module -> envelope/wave section). When playing the sound the movement within the path is made visible

with the bar above the wavetable drawing in Display ON view: you will see a green dot move around the wave path according to the wave modulation set for that wavetable. So, the green light point inside the gray frame is an indicator for the envelope position. The envelope is always limited inside the frame. But the frame itself may be offset by the KEYB parameter and/or by the WAVE OFFSET parameter.

You can reset a complex path in a selected wavetable into a linear path by simply editing the wave path bar.

When you think a wave modulation is not acting as expected, or even not working at all, it is almost certain that the set wavepath for that oscillator is the cause of that.

A newly selected wavetable in the PARAMETERS module -> OSCILLATORS sub module > envelope/wave section under the Resource selection triangle popup menu will always set the wavetable path to its default, being a linear path from the start wave to the end wave of that wavetable.

Envelope points: envelope G1, G2, N1, N2, N3

These envelopes have three envelope points that can be moved:

The first envelope point sets the attack time;
The second envelope point sets the decay time and the sustain level;
The third envelope point sets the release time.

Envelope points in non-looped envelopes: W1, W2, W3, P1, P2, P3, F1, B1

These envelopes have four envelope points that can be moved.

The first envelope point: sets the base level for the complete envelope starting without changing the peak level;
The second envelope point sets the attack time and the decay start level;
The third envelope point sets the decay time and the sustain level;

The fourth envelope point sets the release time and the base level while maintaining the overall level range.

Envelope points in looped envelopes: W1, W2, W3, P1, P2, P3, F1, B1

These envelopes have five envelope points that can be moved.

The first envelope point: sets the base level for the complete envelope starting without changing the peak level;

The second envelope point sets the attack time and the decay start level;

The third envelope point sets the decay fall time (which is also half of the loop portion time) and the loop start level point;

The fourth envelope point sets the loop portion peak level;

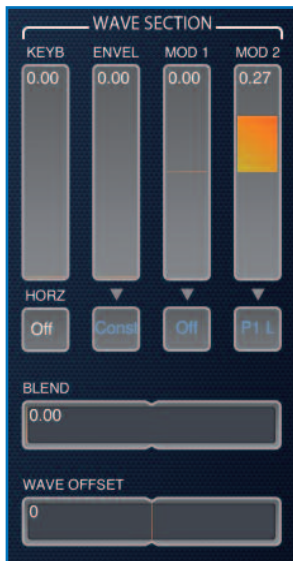
The fifth envelope point randomizes the loop portion start and peak levels, when moved up/down.

Notice: Looped noise envelopes (N1, N2, N3) behave the same, except that the first envelope point is missing. The base level of noise envelopes always starts at zero.



Bi-polar envelope P2 with loop portion and non-linear attack phase and non linear decay phase, which also translates into the loop portion.

WAVE section



In this section of the oscillator window you will find parameters that influence the way a wavetable or TCS is played back.

KEYB slider: this slider sets the keyboard tracking for the wavetable or TCS position.

HORZ: this parameter sets a lock for 16 steps

each time when you change the WAVE OFFSET parameter value. When HORZ is set to *on* the wavetable keeps the path start position until the WAVE OFFSET value reaches 17, 33, 49 (or -17, -33, -49). Then it jumps forth (or back) 16 positions in the wavetable. This is for instance handy when dealing with wavetables that are build up out of sets of 16 and/or 32 and/or 48 and/or 64 waves. take for instance a look at the wave drawings of wavetable *full1* or *full2*: you can clearly see big changes between wave 16/17 (*full1*), wave 48/49 (*full1*) or wave 32/33 (*full2*). This parameter makes switching between those positions easier.

ENVEL slider: this slider sets the amount of wave envelope modulation (ENVEL select checkbox under the slider is set to *W1E*) or the amount of a fixed level on the wave position of the selected oscillator (ENVEL select is *Const*).

Zero means no modulation (ENVEL select is *W1E*) or first wave of the wavetable (ENVEL select is *Const*), 1.00 means full modulation (ENVEL select is *W1E*) or the last wave of the wavetable (ENVEL select is *Const*).

ENVEL select: *E1W* or *Const*. See the description of the ENVEL slider above.

MOD 1 bi-level slider: with this slider you set the amount (positive or negative) of wave position modulation by the selected modulation source MOD 1.

MOD 1 source select: here you select the wave position modulation source. For oscillator 1 the modulation sources for MOD 1 are:

O3: the audio from oscillator 3 (remember, when setting the oscillator MODE to *Sub*, this source can act like a sophisticated LFO which waveshape can be modulated itself as well)
CX: controller from keyboard: horizontal swipe after a key press.

CY: controller from keyboard: vertical swipe after a key press.

CV: controller from velocity: the vertical position on the key you play.

Off: no selection.

For oscillator 2 the modulation sources for MOD 1 are:

O3: the audio from oscillator 3 (remember, when setting the oscillator MODE to *Sub*, this source can act like a sophisticated LFO which waveshape can be modulated itself as well)

CX: controller from keyboard: horizontal swipe after a key press.

CY: controller from keyboard: vertical swipe after a key press.

CV: controller from velocity: the vertical position on the key you play.

Off: no selection.

For oscillator 3 the modulation sources for MOD 1 are:

O2: the audio from oscillator 2 (remember, when setting the oscillator MODE to *Sub*, this source can act like a sophisticated LFO which waveshape can be modulated itself as well).

CX: controller from keyboard: horizontal swipe after a key press.

CY: controller from keyboard: vertical swipe after a key press.

CV: controller from velocity: the vertical position on the key you play.

Off: no selection.

MOD 2 bi-level slider: with this slider you set the amount (positive or negative) of wave position modulation by the selected modulation source MOD 2.

MOD 2 source select: here you select the wave position modulation source.

For oscillator 1 the modulation sources for MOD 2 are:

P1 L: the LFO from oscillator 1 pitch.

CX: Controller from keyboard: horizontal swipe after a key press.

CY: Controller from keyboard: vertical swipe after a key press.

CV: Controller from velocity: the vertical position on the key you play.

Off: no selection.

For oscillator 2 the modulation sources for MOD 2 are:

P2 L: the LFO from oscillator 2 pitch.

CX: Controller from keyboard: horizontal swipe after a key press.

CY: Controller from keyboard: vertical swipe after a key press.

CV: Controller from velocity: the vertical

position on the key you play.

Off: no selection.

For oscillator 3 the modulation sources for MOD 2 are:

P3 L: the LFO from oscillator 3 pitch.

CX: Controller from keyboard: horizontal swipe after a key press.

CY: Controller from keyboard: vertical swipe after a key press.

CV: Controller from velocity: the vertical position on the key you play.

Off: no selection.

BLEND: this parameter set the morphing amount between waves in a wavetable. When zero the transitions between the waves will be smooth, when set to 1.00 the transition will be much more abrupt. Higher settings will emulate the first PPG hardware synthesizers more accurately.

WAVE OFFSET: this parameter sets an offset for the wave start position. See also the **HORIZ** parameter described earlier. The range goes from -50 to +50.



PARAMETERS module, NOISE + FILTER sub module window.

PARAMETERS NOISE+FILTER sub module

In this module you can change all parameters that relate to the filter input mixer, the noise generators, the filter and noise envelopes and the ring modulator.

Again the window is divided, this time into four sections: the *FILTER INPUT MIX* section, under it the *NOISE COLOR* section, in the middle the *ENVELOPE* section and at the right the *FILTER* section.

In the upper right of the NOISE+FILTER module menu bar we see the edit triangle.

Filter+Noise Edit triangle

Copy: this copies the filter settings from the *filter* section.

Paste: this pastes the copied filter settings from the *filter* section so that you can copy these settings from one program into another.

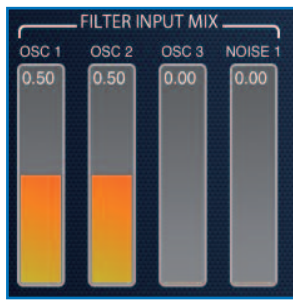
Init: This initializes the *filter* section parameters to their default settings.

Help: this shows a popup window with information about the NOISE+FILTER module.

FILTER INPUT MIX section

The filter input mixer is a mixer where you can set the levels of audio going into the filter. There are 4 levels: those of oscillator 1, 2 and 3 and of noise generator 1.

The filtered signal can then be fed into the AUDIO 1 amplifier (see AMPLIFIER+DELAY



module). This is the most common way for the audio path of a synthesizer: *oscs -> mixer - filter -> amplifier*.

Notice: all audio (filtered or not) goes through the echo/delay FX before it reaches the amplifiers.

Notice: the summed audio signal that is coming out of the filter input mixer section can also be taken directly, without going through the filter, and be fed into VCA 1 and/or VCA 2. You should select *Mix* then as audio source for VCA 1 and/or VCA 2. See the AMPLIFIER+DELAY module for more information.

OSC 1 level slider: this slider sets the amount of audio signal from oscillator 1 that will be fed into the filter.

OSC 2 level slider: this slider sets the amount of audio signal from oscillator 2 that will be fed into the filter.

OSC 3 level slider: this slider sets the amount of audio signal from oscillator 3 that will be fed into the filter.

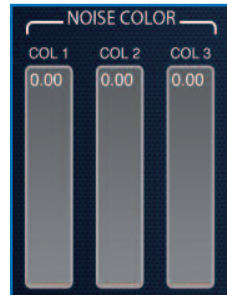
NOISE 1 slider: this slider sets the amount of audio signal from noise generator 1 that will be fed into the filter.

Notice: these sliders have no influence on the audio signal levels of oscillators that are bypassing the filter and are directly chosen as audio source in the AMPLIFIER+DELAY module under the *gain/panorama* section (except the *Mix* setting). So it could well be that you still hear the sound of the oscillators while the above four sliders are all set to zero!

Notice: just like on analog synthesizer, the filter input mix level settings have an important influence on the behavior of the

filter and the behavior of the filter drive. Please do experiment with this!

NOISE COLOR section



PPG WaveMapper has three noise generators that can be used as both audio source and modulation source. Noise can be a very important element of a sound, specially in the attack phase of a sound.

You can emulate the blow portion of a flute sound with it for instance. But noise is also important for creating percussion and drum sounds and also for sound effects, like rolling waves, wind, thunder etc.

At first, three noise generators seems like an overkill, but please think out of the box here when designing sounds. To give you one idea to try out: use two noise generators for creating rolling waves with both their own color, level and modulate them with two different looped envelopes. with the third one going through the filter you could simulate wind at the same time. Use some filter drive as well!

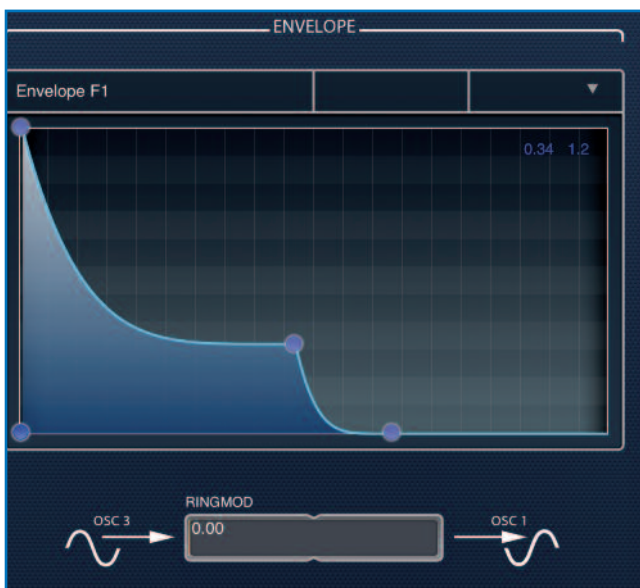
Noise generator 1 can be fed into the filter and therefore has a level input slider (see above). Since noise generator 2 and 3 are only present as modulation source or as a direct output through AUDIO 2 (See AMPLIFIER+DELAY module) there is no need for a dedicated level slider for these two here at the filter input mixer. You can control the amount of noise modulation for noise generator 2 and 3 with the amount mod level slider at the modulation slots were they appear as modulation source. You can control their volume level modulation with the gain modulation amount slider and gain source selector in the gain/panorama section (again: see AMPLIFIER+DELAY module).

COL 1 slider: this slider sets the color of noise generator 1.

COL 2 slider: this slider sets the color of noise generator 2.

COL 3 slider: this slider sets the color of noise generator 3.

ENVELOPE AND RINGMODULATOR section



In the middle part of the screen of the NOISE+FILTER module, we'll see the envelope drawing sub window again. Envelope F1, N1, N2 and N3 can be shown here. They are selected by touching the Cutoff parameter, the NOISE 1 parameter, or the COLOR 1, 2 or 3 parameters. The name of the envelope is shown in the upper left of the envelope drawing window. To the right there is the envelope edit section as pop up menu available by tapping on the triangle.

Envelope edit triangle

Copy: will copy the envelope parameters.

Paste: will paste the copied envelope parameters.

Set Loop/Kill Loop: will set a default loop for the selected envelope or will kill the loop when it is on.

Default Init: will set default envelope settings for the selected envelope.

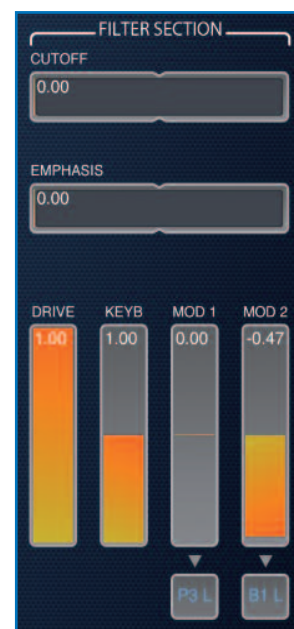
Spread Points: will spread the envelope points more each time it is selected.

Help: shows information about the envelopes.

The small blue numbers in the upper right of the envelope drawing window give the information about the velocity attenuation (you can change the value by tapping on it and sliding up/down the left values of the two blue values) and information about the duration of the selected envelope (this value will change when you drag one of the envelope time-points to the right out of the window).

RING ringmod level slider: this slider sets the amount of ring modulation applied to oscillator 1 by oscillator 3. For this effect there needs to be set an oscillator 1 level greater than zero in the filter input mixer.

FILTER section



CUTOFF slider: This slider controls the cutoff frequencies of the 24 dB lowpass filter of the PPG WaveMapper synthesizer. The higher the amount, the more high frequencies are passing through the filter.

EMPH slider: This slider controls the emphasis (also called resonance) of the filter.

the higher this setting the higher the peak of the frequencies around the cutoff point will be, even resulting in self oscillation at a certain point.

DRIVE slider: This slider controls the amount of drive (distortion) which happens inside the filter. This is a very important parameter to add subtle liveness to your sounds, specially if you modulate the oscillator levels and the filter cutoff parameters.

KEYB tracking slider: this slider controls the amount of keyboard tracking applied to the filter cutoff. At setting = zero there is no keyboard tracking. At setting = 1.00 the cutoff frequency is tracked 1 octave over 1 octave of the keyboard. With a setting of 2.00 the cutoff frequency of the filter is tracked 1 octave over almost 2 octaves. You can hear this effect very well when setting the filter to self oscillation.

MOD 1 filter cutoff bi-level slider: with this slider you set the amount (positive or negative) of filter cutoff modulation by the selected modulation source MOD 1.

MOD 1 source select: here you select the filter cutoff modulation source.
The modulation sources for MOD 1 are:
P3 L: the LFO from oscillator 3 pitch.
CX: controller from keyboard: horizontal swipe after a key press.
CY: controller from keyboard: vertical swipe after a key press.
CV: controller from velocity: the vertical position on the key you play.
O3: the audio from oscillator 3 (remember,

when setting the oscillator MODE to *Sub*, this source can act like a sophisticated LFO which waveshape can be modulated itself as well).
Interesting results can be achieved by modulating the filter cutoff with an audio signal, which is called filter FM (Frequency Modulation).
Off: no selection.

MOD 2 filter cutoff modulation level slider: with this slider you set the amount (positive or negative) of filter cutoff modulation by the selected modulation source MOD 2.

MOD 2 source select: here you select the filter cutoff modulation source.
The modulation sources for MOD 2 are:
B1 L: the LFO from pan 1 balance.
CX: controller from keyboard: horizontal swipe after a key press.
CY: controller from keyboard: vertical swipe after a key press.
CV: controller from velocity: the vertical position on the key you play.
O2: the audio from oscillator 3 (remember, when setting the oscillator MODE to *Sub*, this source can act like a sophisticated LFO which waveshape can be modulated itself as well).
Interesting results can be achieved by modulating the filter cutoff with an audio signal, which is called filter FM (Frequency Modulation).
Off: no selection.



PARAMETERS module, AMPLIFIER + DELAY sub module window.

PARAMETERS AMPLIFIER + DELAY sub module

In this module you can edit all parameters that have effect on the synths amplifiers, the gain and balance envelopes and on the Echo/Delay effects.

We start again in the upper right corner of the menu bar of the AMPLIFIER + DELAY module.

Page Edit triangle

Copy: copies the VCA parameters.

Paste: pasts the copied VCA parameters.

Init: inits the VCA parameters to its default settings.

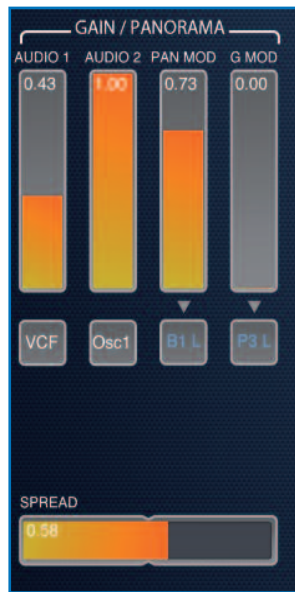
Panning: inits the Panning parameters to its default settings.

Help: shows information on the AMPLIFIER + DELAY parameters.

GAIN/PANORAMA section

In this section you will find all parameters with which you can edit the two amplifiers and the panning. Although the PPG WaveMapper synthesizer engine has a mono signal path (except for the echo/delay -> VCA -> panning), at the end of that path you can create stereo effects.

The synthesizer engine has two so called VCAs (VCA stands for *Voltage Controlled Amplifier* and this name comes from the analog synthesizers area). The two amplifiers can be fed with various audio signals, where the panning can, together with the stereo



echo/delay processor create nice stereo effects.

AUDIO 1 output level slider: this slider controls the output level of VCA 1. What signal is going into VCA 1 is chosen in the AUDIO 1 source select popup menu under this slider.

AUDIO 1 source select: here you choose

what audio signal goes through VCA 1:

VCF: the output of the filter.

Osc 1: the full output of oscillator 1, taken before the filter.

Osc 2: the full output of oscillator 2, taken before the filter.

Osc 3: the full output of oscillator 3, taken before the filter.

Noise1: the audio signal of noise generator N1.

Mix: the mix of oscillator 1, 2 and 3 plus noise generator N1, taken before the filter.

AUDIO 2 output level slider: this slider controls the output level of VCA 2. What signal is going into VCA 2 is chosen in the AUDIO 2 source select popup menu under this slider.

AUDIO 2 source select: here you choose what audio signal goes through VCA 2:

Off: no selection.

Osc 1: the full output of oscillator 1, taken before the filter.

Osc 2: the full output of oscillator 2, taken before the filter.

Osc 3: the full output of oscillator 3, taken before the filter.

Noise1: the audio signal of noise generator N1, taken before the filter.

Mix, the mix of oscillator 1, 2 and 3 plus noise generator N1, taken before the filter.

Noise2: the audio signal of noise generator N2.

Noise3: the audio signal of noise generator N3.

PAN MOD level slider: this slider controls the level of the panning modulation. The source for this modulation can be selected at the PAN MOD source select under this slider.

PAN MOD source select: here you can select the panning modulation source. The choices are:

B1 E: the envelope from panning balance.

B1 L: the LFO from panning balance.

CX: controller from keyboard, horizontal swipe after a key press.

CY: controller from keyboard, vertical swipe after a key press.

CV: controller from Velocity, the vertical position on the key you play.

Off: no selection.

G MOD level slider: this slider controls the level of the gain modulation for both VCAs. The source for this modulation can be selected at the GAIN MOD source select under this slider.

G MOD source select: here you can select the gain modulation source.

CX: controller from keyboard, horizontal swipe after a key press.

CY: controller from keyboard, vertical swipe after a key press.

CV: controller from Velocity, the vertical position on the key you play.

P3 L: the LFO from oscillator 3 pitch.

Off: no selection.

SPREAD slider: with this slider you control the spread of the audio of VCA 1 and VCA 2. With it you can separate the audio of the two amplifiers to the left and right channel.

ENVELOPE section

In this *envelope section* you can control the two gain envelopes G1 and G2, as well as the balance envelope B1. For extensive information about the envelopes see the *envelope/wave section* in the OSCILLATORS module.

Envelope Edit triangle:

Copy: will copy the envelope parameters of envelope G1, G2 or B1.

Paste: will paste the copied envelope parameters of envelope G1, G2 or B1.

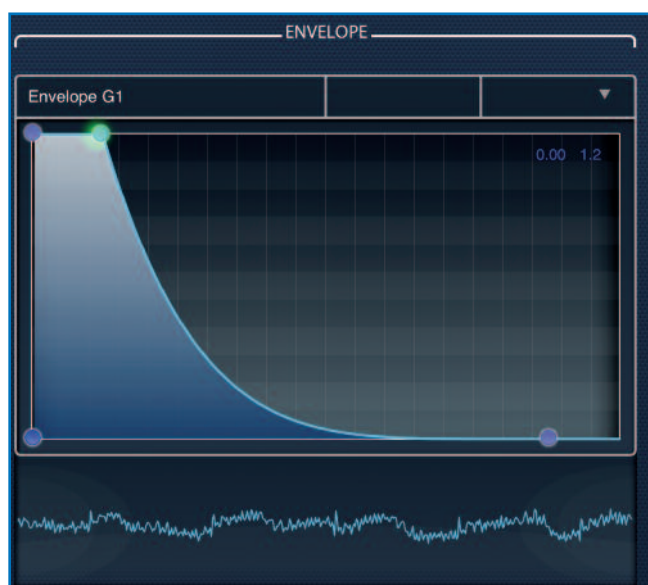
Set Loop/Kill Loop: will set a default loop for the selected envelope or will kill the loop when it is on.

Notice: this parameter is only available when envelope B1 is selected. The two gain envelopes can not be looped.

Default Init: will set default envelope settings for the selected envelope G1, G2 or B1.

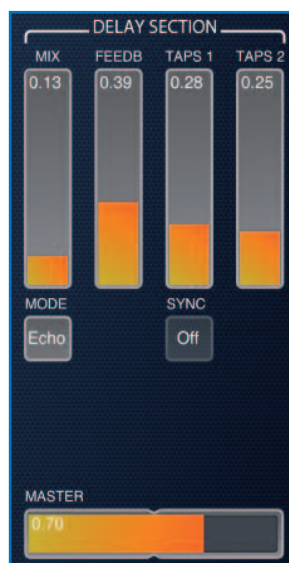
Spread Points: will spread the envelope points more each time it is selected.

Help: shows information about the envelopes.



Under the envelope drawing in the AMPLIFIER+DELAY module, the waveshape of the output signal will be drawn as a nice visual when you play the keys.

The small blue numbers in the upper right of the envelope drawing window give the information about the velocity attenuation (you can change the value by tapping on it and sliding up/down the left values of the two blue values) and information about the duration of the selected envelope (this value will change when you drag one of the envelope time-points to the right out of the window, or to the left).

DELAY section

The delay section has two effects: an *echo* effect and a *delay* effect. The *echo* effect is a delay with two tap points, which are, timewise, independent from each other. The *delay* effect has one delay line, but can be synced to the arpeggiator or to MIDI clock.

MIX level slider: this slider controls the mix between the dry signal and the wet signal of the *echo* or *delay* effect. Zero = dry signal, 1.00 = full wet signal.

MODE button: With this button you select either the *echo* effect or the *delay* effect.

FEEDB level slider: the feedback slider controls the amount of echo/delay signal that will be routed back into the echo/delay processor. At full range the feedback will get into a feedback loop. At 0 there is no feedback.

TAPS 1 time slider: This slider controls the first delay signal of the echo effect, or the delay signal of the delay effect. When *delay* has been chosen with the MODE button, the tempo of the delay signal is visualized in BPM (beats per minute).

Sync button: here you chose the sync option when the *delay* effect has been chosen at the MODE button. The three options are:
Off: free running.
SynM: sync to incoming MIDI clock.
SynA: sync to the arpeggiator speed.

TAPS 2 time slider: this slider is only active when *echo* has been chosen at the MODE selection button. It provides a second delay line for the echo effect.

Notice: The echo effect is better suited for creating reverb-like echoes while the delay effect can be used to create rhythmical patterns of the notes you play.

the master volume of the PPG WaveMapper app. It will be saved per preset program. This way you can easily set a normalized volume for a set of programs, for instance necessary when playing live with the app.

MASTER level slider: this slider controls



PARAMETERS module, AMPLIFIER + DELAY sub module window.

PARAMETERS PERFORMANCE sub module

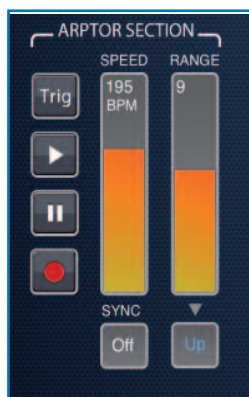
This last PARAMETERS sub module contains four sections: the *Arptor section*, the *LFO section*, the *Keyboard section* and the *Sound Category section*.

The main menu bar contains the 4 LFO selectors (LFO 1, LFO 2, LFO 3 and BAL [panning LFO]) and the *LFO edit triangle*.

ARPTOR section

The Arptor of the PPG WaveMapper app is a combination of a step sequencer and an arpeggiator. you can record up to 16 notes and let them play by the arpeggiator module in various ways. Let's take a look at the available parameters.

First, there are four modes:

**Trigger mode button:**

selecting this will make the arpeggiator start playing when you press a key.

Play mode button:

selecting this will make the arpeggiator play immediately. When you save a program with this

trigger mode, the arpeggiator will start playing as soon as you select that program. Ideal for creating so-called “noodles”: sounds that play forever, something which is for instance used a lot in the ambient music community.

Mode off button: this will simply turn off the arpeggiator.

Record mode button: selecting record will put the arpeggiator in recording mode. You can record up to 16 notes. The playback mode selector (under the range slider) will determine the way the notes are played back. The range slider will determine how many of the recorded notes will play back, and also how.

Speed slider: this determines the speed of the arpeggiator. The range lays between 20 and 632 BPM (beats per minute). The tempo is also depending on the sync setting beneath the slider.

Sync selection button: here you can set your sync setting. There are two options: *Off*: the arpeggiator is free running on its own tempo setting.

Sync: the arpeggiator is synced to incoming MIDI clock in a rhythmical way. The speed slider determines the divide factor of the actual BPM.

RANGE slider: this slider sets the number of notes arpeggiated. It will play the notes according to the play mode setting which

you select under the Range slider.

If the range is smaller than the number of notes of your sequence, the sequence will be truncated. If the range is larger than the sequence, the sequence will be repeated. This repetitions transform the sequence an octave higher or lower (depending on the UP/DOWN mode) with each repetition.

Here is an example to make this clear.

Let's assume you recorded 3 notes: C2 G2 C3. now the slider works as follows (play mode is *Up*).

When set to 1: the arpeggiator plays: C2 C2 C2 C2 etc.

When set to 2: the arpeggiator plays: C2 G2 C2 G2 etc.

When set to 3: the arpeggiator plays: C2 G2 C3 C2 G2 C3 etc.

When set to 4: the arpeggiator plays: C2 G2 C3 C3 C2 G2 C3 C3 etc.

When set to 5: the arpeggiator plays: C2 G2 C3 C3 G3 C2 G2 C3 C3 G3 etc.

When set to 6: the arpeggiator plays: C2 G2 C3 C3 G3 C4 C2 G2 C3 C3 G4 C4 etc.

So the arpeggiator plays the maximum of recorded notes while each higher step-setting with the range slider will make the arpeggiator play the same recorded notes again, but one octave higher.

If the playmode is set to *down* (after the recording of the notes!), it will reverse the playback of the recorded notes.

When the playmode is set to *Alt* it will play the recorded notes up and down.

When the playmode is set to *Rnd*, the recorded notes will be played randomly.

Arptor Mode selection button:

Up: will arpeggiate the recorded notes (when selected while recording) as played. It will arpeggiate the recorded notes (when selected after recording) reversed.

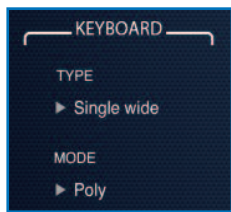
Down: will arpeggiate the recorded notes (when selected while recording) as played. It will arpeggiate the recorded notes (when selected after recording) reversed.

Alt: this will arpeggiate the recorded notes up and down.

Rnd: this will arpeggiate the recorded notes randomly.

Notice: the Arptor in record mode always records what you play. The Mode parameter modifies the *playback* function of the Arptor.

KEYBOARD section



In the keyboard section you can make choices that influence the way the keyboard behaves, both in playing as in visual aspects.

Type selector button: here you select the type of keyboard you want to use.

Single row: this places the keys in a single row (black keys are a little shifted up, but all keys use the same space horizontally).

Single wide: the same as *single row*, but the keys are slightly wider, so you can play them easier. However, you lose two keys.

Double row: this places the black keys in a second row above the white keys, perfectly fitting in between two white keys horizontally.

Piano style: the same as *double row*, however, the black keys have a little more space between each other than the white keys.

Single XL: one row of extra large keys.

Mode selector button: This parameter determines how the keyboard behaves when keys are tapped, hold and swiped over the touch screen.

Poly: In this mode, the keyboard behaves like a normal, polyphonic keyboard. If you tap and hold a key, that key will sound. Swiping horizontally has no effect.

Legato: In this mode, the keyboard behaves like a normal polyphonic keyboard, however, depending on the *glide* setting in the oscillators module section you can create portamento and glissando effects by tapping

on a key, hold it and then slide horizontally over the screen.

Lower glide settings create portamento effects while higher *glide* settings will create glissando effect.

Multi: in this mode, tapping and holding a key will make that key sound. As soon as you slide to a next key, that key will be triggered. This way you can trigger keys without tapping them one by one.

ENVELOPE section



In this envelope section you can control the three pitch envelopes P1, P2 and P3, as well as the balance envelope B1. You select these envelopes by selecting LFO1, LFO2, LFO3 or LFO B1 in the menu bar, or by selecting these envelopes in the two modulation source slots in the LFO section.

For extensive information about the envelopes see the *envelope/wave* section in the OSCILLATORS module.

Envelope Edit triangle:

Copy: will copy the envelope parameters of envelope P1, P2, P3 or B1.

Paste: will paste the copied envelope parameters of envelope P1, P2, P3 or B1.

Set Loop/Kill Loop: will set a default loop for the selected envelope or will kill the loop when it is on.

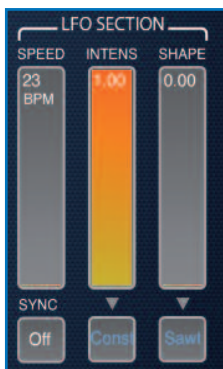
Default Init: will set default envelope settings for the selected envelope P1, P2, P3 or B1.

Spread Points: will spread the envelope points more each time it is selected.

Help: shows information about the envelopes.

The small blue numbers in the upper right of the envelope drawing window give the information about the velocity attenuation (you can change the value by tapping on it and sliding up/down the left values of the two blue values) and information about the duration of the selected envelope (this value will change when you drag one of the envelope time-points to the right out of the window, or to the left).

LFO section



In this section you can alter the LFO parameters. LFOs (low frequency oscillators) are important modulation sources for various tasks. Pitch modulation is a well known example to create vibrato effects.

But there are other applications for LFOs as well: modulating audio levels, filter cutoff, wave position, etc.

In the upper right of the PERFORMANCE module menu bar we find the LFO edit triangle.

LFO Edit triangle (in the menu bar of the *performance* section, upper right of the window):

Copy: copies the settings of the selected LFO.

Paste: will past copied settings into the selected LFO.

Init: will initialize the settings of the selected LFO.

Help: shows some info about the LFOs.

You can select one of the LFOs for editing its parameters by clicking on its name (LFO1, LFO2, LFO3, B1) in the menu bar above the *lfo* section. Each LFO has the same parameter set.

LFO SPEED slider: This slider determines the speed of the LFO, also depending on the setting of the LFO sync selection button under the slider.

LFO Sync selection: Here you set the Sync option for the selected LFO.

Off: the LFO is free running with the speed set with the LFO speed slider.

SynM: the LFO is synced to incoming MIDI clock. The LFO speed slider determines the division of the speed of the incoming MIDI clock.

SynA: the LFO is synced tot the speed set at the arpeggiator section.

LFO INTENS level slider: With this slider you set the maximum intensity of the LFO modulation. This is a global maximum setting for all modulation slots. The intensity can be modulated itself by a modulation source you select under the slider.

LFO INTENS mod selection: here you set a modulation source on the LFO intensity level, for the selected LFO. This can be desirable in various situations. One is to slowly let the LFO modulation come up by modulation the intensity level with an envelope that has a slow attack phase. The modulation sources are:

P1E: the envelope from oscillator 1 pitch.

CX: controller from keyboard: horizontal swipe after a key press.

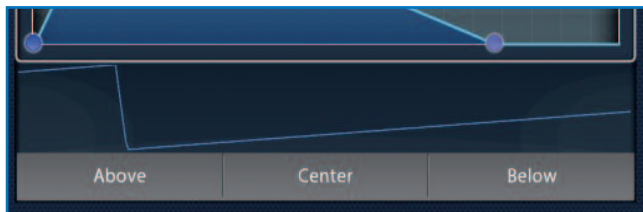
CY: controller from keyboard: vertical swipe after a key press.

CV: controller from velocity: the vertical position on the key you play.

B1L: the LFO from panning 1 balance.

Const: a fixed level set by the LFO INTENS level slider itself.

Before describing the LFO SHAPE parameters, please notice that under the *ENVELOPE SECTION* you will see a drawing of the waveshape of the selected LFO. This drawing is updated with every LFO parameter you change. It is a practical visual help for seeing what you are doing with an LFO.



Under the drawing you see three buttons, named “Above”, “Center” and “Below”. Selecting one of them determines how LFO modulation appears at the selected modulation slot.

Most of the time you might want to use *Center*. It means that the LFO modulation is bi-polar around the initial setting of the destination parameter. So half of the LFO waveshape is creating positive values above the initial setting of the destination parameter, the other half of the LFO waveshape is creating negative values below the initial setting of the destination parameter.

Above: means the LFO is modulating at a maximum of one octave above the initial destination parameter value (when modulating pitch).

Center: means the LFO is modulating around the initial destination parameter value with a range of one octave (when modulating pitch that is half above and half under the initial pitch).

Below: means the LFO is modulating at a maximum of one octave below the initial destination parameter value (when modulating pitch).

Notice: There is one exception to this and that is when you choose the rectangle as LFO

waveshape. Its wave starts at zero. So it is not symmetric like the other waveforms.

Center modulation with a rectangle LFO waveshape will modulate pitch with a maximum range of one octave, starting at the initial parameter setting.

Above modulation with a rectangle LFO waveshape will modulate pitch with a maximum range of one octave, starting *one octave above* the initial parameter setting.

Below modulation with a rectangle LFO waveshape will modulate pitch with a maximum range of minus one octave, starting from the initial parameter setting.

LFO SHAPE slider: This slider morphs the form of the chosen LFO waveshape which is selected with the LFO shape selection button under the slider.

When *Sawtooth* is selected, the slider morphs the sawtooth to a triangle waveshape (when going from 0.00 to 0.50).

When *Rectangle* is selected, the slider morphs the rectangle waveshape from a 10% pulsewidth to a 50% pulse width.

When *Sine* is selected, the slider morphs from a soft sawtooth into a sine wave (when going from 0.00 to 0.50).

When *S+H* is selected, the slider morphs the wave shape width from 10% to 50% (when going from 0.00 to 0.50).

LFO SHAPE mod select: Here you select the LFO’s waveshape for the selected LFO.

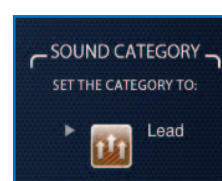
Sawt: sawtooth wave (morphable to triangle wave)

Rect: rectangle waveshape (morphable to pulse wave)

Sine: sine waveshape (morphable to saw)

S&H: S+H waveshape (morphable to soft S+H)

SOUND CATEGORY SECTION



Sound Category selection popup: With this parameter you can give the programs you create a category indication.

In the browser view you may select a category for display.

-  *Arp*: arpeggiator sounds.
 -  *Atmo*: atmosphere/ambient sounds.
 -  *Bass*: bass sounds.
 -  *Efx*: effect sounds.
 -  *Keys*: typical keyboard sounds.
 -  *Lead*: lead sounds.
 -  *Pad*: pad sounds.
 -  *Perc*: percussion and drum sounds.
 -  *Poly*: polyphonic sounds.
 -  *Vocal*: vocal/formant sounds.
 -  *Wave*: typical wavetable sounds.
-



The Analyse module window. Here you can convert samples into TCS files, and TCS files into wavetables.

ANALYSE page

Now we arrived at the heart of the PPG WaveMapper's audio engine. In the ANALYSE page you can import sample files (mono and stereo 16 bit WAV or AIF) and transform them into so-called Time Corrected Samples (TCS files). Furthermore you can translate those TCS files again into wavetables if you like.

Be aware that not all samples will work with TCS conversion. Harmonic sounds (with or without noise) will work best for creating TCS files. Inharmonic sounds are less suitable for this analysis although you can experiment of course. This is also true for sounds that have a non constant pitch, like speech or rhythmic tracks (drumloops, arpeggio's etc). However, PPG WaveMapper is capable of

playing non TCS samples as oscillator source also!

But in that case the sample is played back linear, without any control over the timing. When the analysis algorithm can not find a way to properly convert a sample into a TCS file, it still will create a resource file that can be played as a normal sample. See the oscillators module for more information. So, there is *no* excuse to not use any sample you have put in PPG WaveMapper's documents directory (using iTunes filessharing).

Please be aware that you should not use samples that are too long (you will get an error message). Also, make sure your samples are truncated as good as possible and normalized (no silence before its start or at the end, Ppg wavemapper will not remove those empty sample parts).

When you are in the ANALYSE page, it might be best to start with a special test program to hear how your samples translate into TCS files. The test program has a looping wave envelope set for oscillator 1 (to which the new TCS file will be assigned).

However, you may use any program to try out the TCS files. If you do not use the test program, the last program selected before you switched to the ANALYSE page, will be the program used. The newly created TCS file will be assigned to oscillator 1 of that program.

First of all, you need to copy one or more samples into the document folder of the PPG WaveMapper app. You do that in iTunes on your desktop or laptop computer. Then those samples will appear under the folder icon in the menu bar of the ANALYSE page.

Then you might want to choose first which program to use to play the TCS file: that could be the program you had selected before you switched to the ANALYSE page (do nothing) or it could be the special test program: if so press *Test Prog* first. You will then use a program with a looped wave envelope for oscillator 1 to which the TCS file will be assigned.

After that, tap on the folder icon in the menu bar and select the sample of your choice. Now the audio engine will analyse the sample and create a TCS file for you which you can directly play on the keyboard (or not, but then it will create a special TCS file that can be used as a normal sample for the oscillators).

Now let's take a closer look at all the available parameters to see what else you can do with the TCS file.

Sample selection folder (upper left in the ANALYSE page's menu bar, label 1): as said before, here you select the sample of your choice for TCS conversion. Selecting a sample will immediately start the TCS conversion.

Test Prog button: pressing this button will initialize the program that will play the TCS file. The test program uses one oscillator and has a wave envelope in loop mode assigned, so you can judge the result of the TCS conversion. Press this before analysing the sample.

TCS size slider: With this slider you can make the TCS file smaller by decreasing the number of periods the sound file has. It would be good practice to always use this slider to see if you could decrease its size. Remember that the iPad has limited memory so the shorter the oscillator resources the better it is. Sometimes, decreasing the number of periods with this slider can also solve unwanted artifacts from the TCS conversion. When adjusting the slider you can still play the keyboard and hear directly the results of your actions.

Adjust slider: this slider helps in correcting the pitch of a TCS file, which might be "off" for instance when noise is in the original sample, or by a little pitch shifting in the original sample. This can make the TCS file detuned, specially when the resource file is looped. Again, also this slider updates the file directly so you can hear the results immediately when playing the keyboard while adjusting.

In the middle of the window you see a *Time Correction Sample section*. Here, the TCS wave is visualized in the grid-window plus some information about the just created TCS file that is shown under the drawing window: the number of periods (for a TCS file), the number of waves (for a wavetable), the quality (how well the original sample could be analyzed by the TCS algorithm) and finally the zoom factor (which may be changed by tapping on it and selecting your choice).

Above the view window you can change the name for the newly created TCS file.

Save TCS button: After translating a sample into a TCS file you might want to save it.

Pressing this button will save the TCS file in the PPG WaveMapper documents folder. It will be named sample.c.wts (where “sample” stands for the name of your original audio file) when you look at it in the iTunes PPG WaveMapper documents folder. In the oscillator resource selection popup menu it will appear as sample.c.

Split TCS button: this is a special feature you can assign to a TCS file. It will split the TCS file into two different files with different spectral contents:
 sample.cl.wts which contains the low spectral content of the original TCS file.
 sample.ch.wts which contains the high spectral content of the original TCS file.
 You could use these three TCS files for instance in a three oscillator setup to have a better level control of the spectral content of the TCS file. But you are of course free to experiment with just one of them!
 When using Split TCS the sample.ch file will become the oscillator 1 resource for the selected program.

To the right of the TCS wave drawing window you will find the parameters with which you can translate a TCS file into a wavetable, or split an existing wavetable into three wavetable files with various spectral content.

WT Size slider: with this slider you set the number of wavetable waves that should be used for the translated wavetable. the simpler the content of the wavetable, the less waves should be used. More complex wavetables could use the maximum of 256 waves.

Make WT button: pressing this button will start the conversion of the TCS file into a wavetable. The progress bar above it will indicate the progress of the conversion. When that process is finished you can play the wavetable directly with the keyboard (again, the newly created wavetable will be assigned as oscillator 1 resource of the selected program).

Save WT button: this will save the wavetable or split wavetable (see below) into the PPG WaveMapper’s document folder, and will become available in the resource popup menu in the oscillator section.

Split WT button: this will split the wavetable into three wavetable files, again with different spectral content.
 wavetable.l.wts which contains the low spectral content of the original wavetable.
 wavetable.h.wts which contains the high spectral content of the original wavetable.
 After splitting a wavetable the wavetable.h file (the one with the high spectral content) will be the selected oscillator resource for the selected program.

ANALYSE page edit triangle

Expanding: when you want to split a existing TCS or wavetable file at a later time, you can do so by first selecting the program with the TCS file or wavetable assigned to oscillator 1 you want to expand. Then select *Expanding* in the popup menu when tapping the edit triangle (upper right corner of the menu bar).
Help: this shows additional information about the *Analyses* module.



The SETUP module: here you can set system and global parameters, as well as MIDI input and output settings.

SETUP module

In the setup module we have the parameters that have to do with system settings, global synthesizer settings and MIDI settings.

In the upper menu bar of the SETUP module window you will find two edit triangles.

The left edit triangle brings up a popup menu with one parameter:

Help: shows additional information about the SETUP module parameters.

The right edit triangle brings up a popup menu with two items.

MIDI CC: this is a list with MIDI CC numbers that are assigned to PPG WaveMapper parameters, see complete list at the end of this manual. With this info you could control

these parameters with external soft- or hardware (be it other apps on the iPad, or soft-/hardware connected to the iPad's usb connector).

Help: this will show more information on the various MIDI parameters and behavior of PPG WaveMapper.

SYSTEM section

System Volume slider: with this slider you can set the total volume of the iPad output. It is a global setting for all selected programs. In fact, it is a copy of the iPads volume control.

Signature text field: here you can set the signature that gets attached to your new saved programs.



Quality selection popup: here you set the audio quality of the app.

Premium: the app will use a 44.1 kHz sample rate.

Production: the app will use a 32.0 kHz sample rate.

Consumer: the app will use a 22.05 kHz sample rate.

Note that a lower sample rate will allow you to use more voices, but may result in a difference in sound.

Handed selection popup: here you can set the app to be more usable for left- or right-handed people. This has to do with the various touch option on the iPad. This setting also determines the place of the keyboard octave up/down buttons.

The options are:

Right: Optimized for right handed people.

- When you tap on a vertical slider and drag up and down a little to the left of the slider, the values will change quickly. The more you move to the right, the slower the values will change with vertical slides.

- The keyboard octave up and down octave buttons will be placed left of the keyboard.

Left: Optimized for left handed people.

- When you tap on a vertical slider and drag up and down a little to the left of the slider, the values will change slowly. The more you move to the right, the faster the values will change with vertical slides.

- The keyboard octave up and down octave buttons will be placed right of the keyboard

Audio Mix on/off: this setting turns on or off the possibility to control the audio (through MIDI) with another app (also

known as “background audio” on iOS devices).

off: audio from PPG WaveMapper is switched off when other apps are playing.

on: audio from PPG WaveMapper is mixed with the output of other apps

SYNTHESIZER section

In this section you can set some global parameters for the synthesizer.



Voices selection slider: this slider sets the maximum number of voices the app can produce. It depends on the iPad version and samplerate how many voices will be the maximum. The minimum is 1 voice, the maximum is 20 voices.

Please note that especially on iPad 1 models it is recommended to switch off other audio apps to get the maximum number of voices in PPG WaveMapper !

Total Tune bi-polar slider: This slider sets the global reference pitch for the synthesizer. The app is normally tuned to the reference A (= 440 Hz) with this slider in the middle position. You can adjust the tuning up and down 10 Hz, so you can tune the app when played with other instruments that are not tuned to 440 Hz. Double tapping on the slider resets it to the default = 440 Hz.

KEYS popup menu: with this popup menu you can set whether you want to control the PPG WaveMapper synth or only use it to send out MIDI, or both.

Intern: only use keyboard for internal synth control.

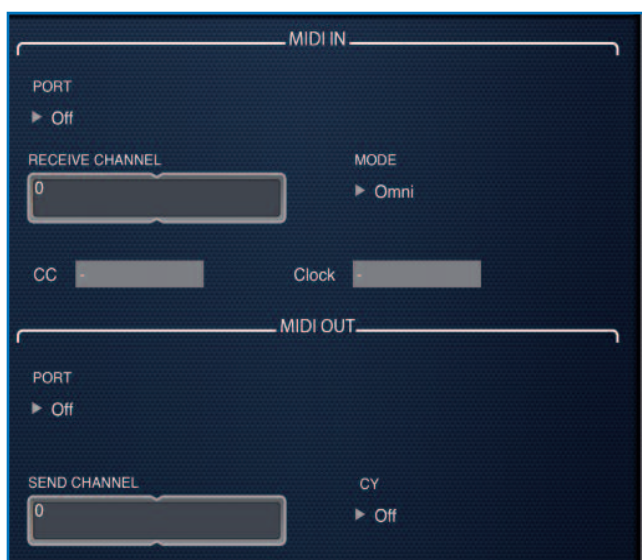
Extern: only use for MIDI out.

Both: use the keyboard both internal and external control.

Pitch Wheel slider: with this slider you set the range of the Pitch wheel modulation in number of semi-tones. The range goes from 1 semitone to 24 semi tones.

MIDI IN/OUT section

The MIDI IN Port selection popup: Here you can select the available MIDI inputs from other iPad apps, or MIDI inputs that are available on the wifi network you're on or MIDI inputs available through the iPad usb connector.



Select the MIDI input here when you want to play PPG WaveMapper through an external MIDI keyboard, or want to sequence or arp the app through an external software MIDI sequencer or arpeggiator (be it on the iPad itself or from other hard- or software connected through the iPad's usb port).

MIDI Receive channel selection slider:

With this slider you select on which MIDI channel the PPG WaveMapper app should listen for incoming MIDI messages.

0: The app will listen for MIDI messages on all 16 MIDI channels.

1-16: The app will only listen for MIDI messages on the selected MIDI channel. This MIDI receive channel selection slider only works in Mono and Poly Mode (see beneath).

MIDI Mode selection popup

here you select the MIDI Mode of the PPG WaveMapper app.

Omni Mode: In this mode the app listens to incoming MIDI messages on all channels and the app will use all available voices. The MIDI receive channel slider has no effect in this mode.

Mono Mode: In this mode only one voice at a time will be used on one channel (selected by the MIDI Receive channel slider). It only has a gate (no multi trigger), so when playing the keyboard legato, you won't get a new trigger for the next note. When combining this with programs that use portamento (glide) you can get some nice effects.

Poly Mode: Uses all available voices, but only on one channel, which must be chosen with the MIDI Receive channel selection slider. 0 means off in this Mode.

VpC Mode: Voice Per Channel Mode. This is a special mode where each voice may use a different MIDI channel and reacts only on that channel after the trigger. The MIDI receive channel slider has no effect in this mode.

Interesting when setting up sequences with apps or hardware that can run multiple sequences on multiple MIDI channels and modulate the voice with Pitchbend and/or MIDI CC1 and MIDI CC2. You can create polyphonic modulations this way that can not be achieved otherwise.

Notice: the PPG WaveMapper touch keyboard does not control the CX and CV controllers of the app in VpC mode.

MIDI CC reception channel indicator: the indicator shows you the number and value of any incoming MIDI CC message.

MIDI clock speed and bars reception

indicator: this indicator shows you the speed of the incoming MIDI clock in BPM and how many beats are received when external MIDI clock is incoming.
 BPM = 89 T=12 means that the incoming MIDI clock signal has as beat of 89 beats per minute and that 12 beats are received so far (in a 4/4 measure yyy=12 means that 3 bars of 4/4 has passed)

The MIDI OUT Port selection popup

Here you can select the available MIDI outputs from other iPad apps, or MIDI outputs that are available on the wifi network you are on or MIDI outputs available through the iPads usb connector. Select the MIDI output here when you want to use PPG WaveMapper to play something outside the app with the PPG WaveMapper keyboard. It is also the output over which MIDI CCs will be send from PPG PPG WaveMapper.

MIDI output channel selection slider

with this slider you can set a MIDI channel on which MIDI events from the app will be send on. Zero means no MIDI output channel.

CY send mode selection popup: with this popup menu you can set how the CY controller translates to the MIDI output of PPG WaveMapper:

Off: nothing is send

After touch: the CY controller messages are send as after touch messages.

Poly Pressure: the CY controller messages are send as poly pressure messages.

MIDI CCs and map icons

A very special feature is the possibility of the PPG WaveMapper app to send out and/or receive MIDI CCs which are attached to the x and y position of 5 of the 8 map icons.

map icon L (LFOs):

x-position = MIDI CC 3;

y-position = MIDI CC 4.

map icon O (Oscillator):

x-position = MIDI CC 5;

y-position = MIDI CC 6.

map icon N (Noise):

x-position = MIDI CC 8;

y-position = MIDI CC 9.

map icon 1 (Oscillator 1 resource):

x-position = MIDI CC 10;

y-position = MIDI CC 11.

map icon 2 (Oscillator 2 resource):

x-position = MIDI CC 12;

y-position = MIDI CC 13.

map icon 3 (Oscillator 3 resource):

x-position = MIDI CC 14;

y-position = MIDI CC 15

map icon F (Filter):

x-position = MIDI CC 16;

y-position = MIDI CC 17.

map icon G (Gain):

x-position = MIDI CC 18;

y-position = MIDI CC 19.

With this awesome feature you can play and record icon movements from/into your MIDI controller).



PROGRAM module

PROGRAM EDIT popup menu

Right from the program selection knobs in the main menu bar there is a Program Edit popup menu when you click on the symbol (picture above, label 1) Here you find program edit functions, as described below.

Save: This saves any changes you made for the selected program.

Save as: This will save the existing program to a new position. It opens a save dialog box.

Init: this will initialize the selected program. The initialized program is a good starting point for creating new programs.

Init new: This will create a new program in the selected bank, named "Init".

Help: this will show information about the above program parameters.

PROGRAM BROWSER module

In this module you will find three sections:
The Program Manager section.
The Bank Manager section.
The Program Browser section.

PROGRAM MANAGER section

This upper left window shows you the name of the selected bank, the number of free program slots (a bank can have a maximum of 100 programs in it) and the creation date of the bank.

Program Bank select popup: this popup menu gives you the opportunity to select the Program Bank you want to use for playing and creating you sounds.



Copy to target: this command copies the selected program (which can be seen on the right in the Program Browser window) from the bank it is in, to a new bank. To be able to do so you have to select or create a new bank in the Bank

Manager. You can not copy a program this way into the same bank the source program is in. If you wish to do so, then use *Copy New* in the Program Edit popup menu.

Delete Program: this will delete the selected program from the bank.

Notice: you can not undo this action.

Bank information text window: by tapping in this window, you can add some information text about the selected bank.

User Roots Bank select popup: this popup menu gives the opportunity to select a program bank with programs, that can be used as root programs in the MAPPING module.

Notice: there can only be one user root bank active at the same time, and there can only be one preset bank active at the same time.

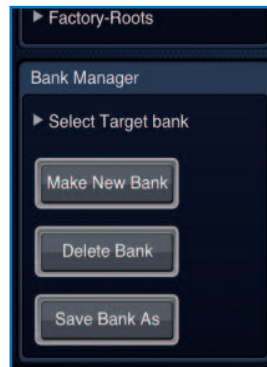
In total there could be a maximum of 300 programs active:

- 100 factory root programs (always active)
- 100 user root programs
- 100 preset programs

BANK MANAGER section

The lower left window shows the name of the selected bank, the number of free program slots in that bank (a bank can have a maximum of 100 programs in it) and the creation date of the bank.

Select target bank popup menu: here you can select banks that can function as a target bank (see Program Manager) or for deletion.



Make New Bank: this button creates a new bank for you, with one init sound in it. You can create as many banks as you like.

Delete Bank: this will delete the selected bank from the app.

Notice: this can not be undone!

Save Bank As: this will copy the selected bank into a new bank, including all of its programs.

PROGRAM BROWSER section

In the window on the right side you can select, sort or filter programs in various ways (picture page 45).

Above the browser window we see various popup triangles. From left to right:

Sorting edit triangle popup menu: here you can select the way you want to sort the programs in the selected bank:

All: This will sort the programs to their category setting, and then to their program number within the selected bank.

Unsorted: this will sort the programs to their program number within the selected bank.

Alpha: this will sort the programs in alphabetic order.

Arp: this will filter out all programs with Arp set as category.

Atmo: this will filter out all programs with Atmo set as category.

Bass: this will filter out all programs with Bass set as category.

Efx: this will filter out all programs with Efx set as category.



The Program Browser section of the BROWSER module. This is the place where you select your user programs, and can get all kind of information attached to the programs.

Keys: this will filter out all programs with Keys set as category.

Lead: this will filter out all programs with Lead set as category.

Pad: this will filter out all programs with Pad set as category.

Perc: this will filter out all programs with Perc set as category.

Poly: this will filter out all programs with Poly set as category.

Vocal: this will filter out all programs with Vocal set as category.

Wave: this will filter out all programs with Wave set as category.

Category edit and rating triangle

Rating: with this setting you can rate a program with 1 to 5 stars. Just tap on the star behind the

program you want to rate and swipe to the left/right to set the number of stars.

Category: this shows the category of each sound and you can change it by tapping on the icon and swiping to the left or the right.

Various program information triangle

Main source: this lists the wavetable name or time corrected sample name of the first oscillator of the program.

Secondary Source: this lists the wavetable name or time corrected sample name of the second oscillator of the program.

Tertiary Source: this lists the wavetable name or time corrected sample name of the third oscillator of the program.

KB info: this lists the keyboard type and the number of keys per octave.

Envelopes: this lists the number of used envelopes in the program.

Arptor: this lists info for the Arptor setting of the program.

Program date/update and program number listing popup triangle

Created: this will show the creation date of each program.

Updated: this will show the latest modification date of each program.

Statistic: this will list the program number of each program.

Bank edit triangle

Export: this will let you export the selected

bank with all its programs from the app through email. After selecting *Export* you will be asked if you would like to include the user resources you might have added to the factory ones. After that, an email will be composed with the backup-data which you then can send to the email address of your choice. This is a very convenient way to make backups of your sounds, or to share them with other users.

Reset Presets: this command will reset all factory presets to its original state.

Notice: this can not be undone! Make a copy

Help: this shows more info on the Program Browser module.

KEYBOARD

The keyboard in the lower section of the screen will always be visible, no matter what module, page or section you are viewing. This way you can always play your (edited) sounds, no matter what.

The keyboard is customizable in various ways.

To the right or left of the keyboard (depending on the “Handed” setting in the SETUP module) there are two buttons to shift the keyboard up and down per octave. The total up/down range of the keyboard is 5 octaves this way. You can make that range even wider by using the oscillators octave settings in the OSCILLATORS module.

Above these octave up/down buttons you will find the keyboard edit triangle with some more keyboard controls.

+/- octave buttons: these two buttons will shift up/down the keyboard 1 octave each time you tap on them.

keyboard edit triangle (label 1 in the upper picture next page): here you will find some edit options for the keyboard.

Reset: Will reset the keyboard to 12 semitones.

Copy: will copy the keyboard settings to the clipboard.

Paste: will paste the copied keyboard settings into the selected preset program.

Modes: this is a shortcut to the KEYBOARD section in the PERFORMANCE sub module. There you can edit the keyboard type, mode and scale to taste.

Extend/Reduce stage: this is a nice feature for live performance. It toggles between the reduced and extended keys (vertical length), see lower picture on page 47. This will obviously only work with a single row keyboard view. The CY and CV controller will be extended vertically as well when chosen. You can not save this setting.

Notice: a shortcut for the Extend/Reduce function is tapping on the lower half of the Recorder field (lower picture page 47, label 2)

Edit: when selecting this setting, each key you touch on the keyboard will disappear. This way you can create custom keyboard scales which can be saved per program.

Help: extra information about the keyboard.

Notice: The keyboard settings here work together with the KEYBOARD section (see page 32).



The normal keyboard layout. The keyboard is always visible in PPG WaveMapper, no matter in what module or page you are.



The extended keyboard layout. The keys are vertically extended for better playability. Notice that this only works with single row keyboards (see beneath) and that the parameters under the extension part can not be edited in this mode.

Besides the normal keyboard gate and trigger functions to play the synthesizer in a musical way, it has three more controllers attached to it.

CX: this controller is connected with a horizontal swipe when tapping and holding a key. The CX parameter is a destination in many modulation slots, so you can assign all kinds of modulation to it. The CX value rises when you swipe to the right and falls when you swipe to the left.

Notice: CX modulations do not work when you are in legato mode.

CY: the CY controller is connected with a vertical swipe when tapping and holding a key. The CY parameter is also a destination in many modulation slots. The CY value rises when you

swipe up and falls when you swipe down.

CV: the CV controller is yet another keyboard controller that is connected to the vertical position of the key you are tapping on. This CV controller is hardwired to the velocity parameter when you use an external keyboard that produces key velocity controller values by how hard you hit the keys. When using the iPad touchscreen keyboard in PPG WaveMapper the vertical position where you tap a key increases or decreases the velocity value (the higher you tap, the higher the velocity value will be).

The CV controller is a destination in many modulation slots in PPG WaveMapper. You can also set the output format of the CY controller, see the SETUP page for that.

RECORDER



The recorder to the right of the keyboard is a handy audio recorder for making quick recordings of your

music.

When you click on the *Off* text you will open a popup menu with three options:

Off: no operation.

Play: this will play back the recorded audio buffer in a loop. You will see a graphical representation of the audio in the small audio window.

Rec: this will arm the recorder: as soon as you touch a key or as soon as you start the arpeggiator the recorder will start recording until you touch *Off*, *Play* or *Rec* again. The maximum recording time is about 10 minutes.

Recorder edit triangle

Copy: this will copy the recorded audio into the clipboard. You can then paste the audio into other apps that support copy/paste audio.

Save: this will save the audio file in PPG WaveMappers Document folder. You can then copy the audio to your desktop or laptop for further actions.

Help: this shows some in-app info on the audiorecorder.

VARIOUS

Interaction between PPG WaveMapper and PPG WaveGenerator

When you own both apps the following exchanges are possible:

- PPG WaveMapper may import program banks from PPG WaveGenerator through email.
 - PPG WaveMapper may open program banks and wavetables that were copied into PPG WaveMappers documents folder via iTunes filesharing.
 - PPG WaveGenerator may open wavetables copied into PPG WaveGenerators documents folder via iTunes filesharing.
- PPG WaveGenerator can not use programs from a PPG WaveMapper program bank.

AudioBus

The PPG WaveMapper app supports AudioBus, the inter-app iOS audio interface. With AudioBus booted you can stream PPG WaveMappers audio to other apps to process it with FXs or to record it into a DAW.

Notice: AudioBus adds a heavy load on the iPad processor. This may result in dropouts of sound. In that case please reduce the

number of voices in PPG WaveMapper. We found that the best performance with Audiobus can be achieved by using Premium mode (SETUP module, system section). If you want to turn off AudioBus please terminate it. To do so: double tap the iPad Home button, then tap and hold the AudioBus icon until the (-) appears and then tap on the - symbol to terminate the app.

MIDI CC list

This list shows which MIDI CC is attached to what PPG WaveMapper parameter. The mentioned parameters are editable through incoming MIDI CCs from other iPad apps/ external soft-/hardware. All CCs are sent out by the app when parameters are changed.

The eight mapping icons and a few important parameter sliders are animated in the app when MIDI CCs of those parameters are received from an external MIDI controller/sequencer: CC3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 (the x- and y-position of the eight map icons), plus CC7 master volume, CC 23 Envelope W1 Amount, CC 33 Envelope W2 Amount, CC 43 Envelope W3 Amount, CC 55 Filter Cutoff, CC 56 Emphasis, CC122 Audio 1 level and CC123 Audio 2 level.

Full MIDI CC list

CC 1	CY controller	CC 48	Osc 3 Volume level
CC 2	CX controller	CC 49	
CC 3	LFO Map Icon X	CC 50	Noise1 Audio Gain level
CC 4	LFO Map Icon Y	CC 51	Noise1 Color
CC 5	Oscillator Map Icon X	CC 52	
CC 6	Oscillator Map Icon Y	CC 53	
CC 7	Master Volume	CC 54	
CC 8	Noise Map Icon X	CC 55	Filter Cutoff
CC 9	Noise Map Icon Y	CC 56	Filter Emphasis
CC 10	Osc 1 Map Icon X	CC 57	Filter Modulation 1 Level
CC 11	Osc 1 Map Icon Y	CC 58	Filter Modulation 2 Level
CC 12	Osc 2 Map Icon Y	CC 59	
CC 13	Osc 2 Map Icon Y	CC 60	
CC 14	Osc 3 Map Icon X	CC 61	
CC 15	Osc 3 Map Icon Y	CC 62	
CC 16	Filter Map Icon X	CC 63	
CC 17	Filter Map Icon Y	CC 64	
CC 18	Gain Map Icon X	CC 65	
CC 19	Gain Map Icon Y	CC 66	
CC 20	Osc 1 Glide rate	CC 67	
CC 21	Osc 1 Pitch Mod 1 level	CC 68	
CC 22	Osc 1 Pitch Mod 2 level	CC 69	
CC 23	Osc 1 Pitch Envelope intensity level	CC 70	LFO 1 Intensity
CC 24	Osc 1 Wave Mod 1 level	CC 71	LFO 1 Waveshape morph
CC 25	Osc 1 Wave Mod 2 level	CC 72	LFO 1 Speed
CC 26	Osc 1 Wave Offset	CC 73	LFO 2 Intensity
CC 27	Osc 1 Wave Blending level	CC 74	LFO 2 Waveshape morph
CC 28	Osc 1 Volume level	CC 75	LFO 2 Speed
CC 29		CC 76	LFO 3 Intensity
CC 30	Osc 2 Glide rate	CC 77	LFO 3 Waveshape morph
CC 31	Osc 2 Pitch Mod 1 level	CC 78	LFO 3 Speed
CC 32	Osc 2 Pitch Mod 2 level	CC 79	LFO 4 Intensity
CC 33	Osc 2 Pitch Envelope intensity level	CC 80	LFO 4 Waveshape morph
CC 34	Osc 2 Wave Mod 1 level	CC 81	LFO 4 Speed
CC 35	Osc 2 Wave Mod 2 level	CC 82	
CC 36	Osc 2 Wave Offset	CC 83	
CC 37	Osc 2 Wave Blending level	CC 84	
CC 38	Osc 2 Volume level	CC 85	
CC 39		CC 86	
CC 40	Osc 3 Glide rate	CC 87	
CC 41	Osc 3 Pitch Mod 1 level	CC 88	
CC 42	Osc 3 Pitch Mod 2 level	CC 89	
CC 43	Osc 3 Pitch Envelope intensity level	CC 90	Envelope 1 (wave osc 1) Attack
CC 44	Osc 3 Wave Mod 1 level	CC 91	Envelope 1 (wave osc 1) Decay
CC 45	Osc 3 Wave Mod 2 level	CC 92	Envelope 1 (wave osc 1) Sustain
CC 46	Osc 3 Wave Offset	CC 93	Envelope 1 (wave osc 1) Release
CC 47	Osc 3 Wave Blending level	CC 94	Envelope 1 (wave osc 1) base level
		CC 95	Envelope 1 (wave osc 1) peak level

CC 96	Envelope 2 (gain audio 1) Attack	CC 112	Envelope 5 (wave osc 3) Attack
CC 97	Envelope 2 (gain audio 1) Decay	CC 113	Envelope 5 (wave osc 3) Decay
CC 98	Envelope 2 (gain audio 1) Sustain	CC 114	Envelope 5 (wave osc 3) Sustain
CC 99	Envelope 2 (gain audio 1) Release	CC 115	Envelope 5 (wave osc 3) Release
CC 100	Envelope 3 (filter) Attack	CC 116	Envelope 5 (wave osc 3) base level
CC 101	Envelope 3 (filter) Decay	CC 117	Envelope 5 (wave osc 3) peak level
CC 102	Envelope 3 (filter) Sustain	CC 118	Envelope 6 (noise 1) Attack
CC 103	Envelope 3 (filter) Release	CC 119	Envelope 6 (noise 1) Decay
CC 104	Envelope 3 (filter) base level	CC 120	Envelope 6 (noise 1) Sustain
CC 105	Envelope 3 (filter) peak level	CC 121	Envelope 6 (noise 1) Release
CC 106	Envelope 4 (wave osc 2) Attack	CC 122	Audio 1 gain level
CC 107	Envelope 4 (wave osc 2) Decay	CC 123	Audio 2 gain level
CC 108	Envelope 4 (wave osc 2) Sustain	CC 124	Spread
CC 109	Envelope 4 (wave osc 2) Release	CC 125	Gain Mod level
CC 110	Envelope 4 (wave osc 2) base level	CC 126	Panning Mod level
CC 111	Envelope 4 (wave osc 2) peak level	CC 127	VCA 2 envelope gain level